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# Kinetics and mechanism of triphenylphosphine quarternization with unsaturated carboxylic acids in various media

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## Abstract

Reactions of tertiary phosphines with unsaturated electrophilic reagents are widely used in synthetic organic chemistry. Typical satellites of these transformations are proton migration processes, which can play decisive role in such reactions. To learn more about proton transfer mechanism, kinetics of reaction of triphenylphosphine with a series of unsaturated carboxylic acids in alcohols, carboxylic acids, and aprotic solvents was studied by spectrophotometry. The form of kinetic equation depends on proton-donor properties of solvent and has a general third order. Proton transfer occurs from the solvent in carboxylic acids; the second molecule of substrate is required in aprotic solvents, and both canals of proton migration take place in alcohols. Existent proton transfer canals are isokinetic, attesting to the invariability of general features of the reaction mechanism independent of proton-donor nature at the last step of the interaction. A stepwise mechanism including initial generation of 1,3-dipole followed by proton transfer to the carbanionic centre from the medium is suggested. 

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## Keywords

Kinetics, Mechanism, Tertiary phosphines